FIG. 1.

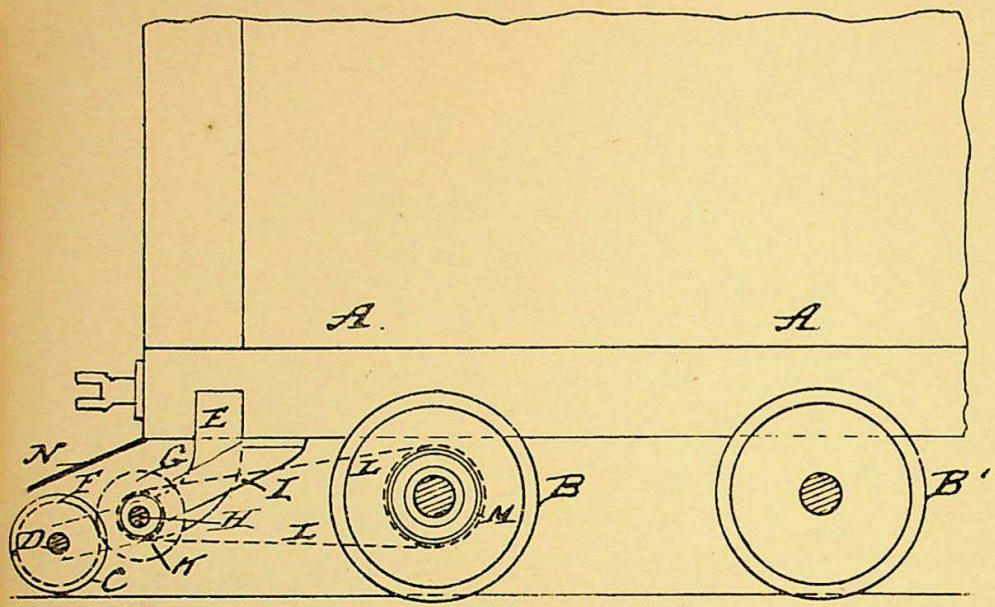


FIG. 2.

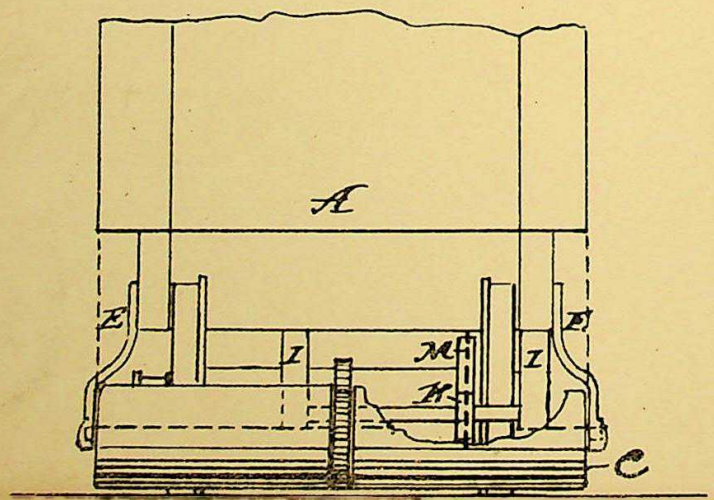


FIG. 3.

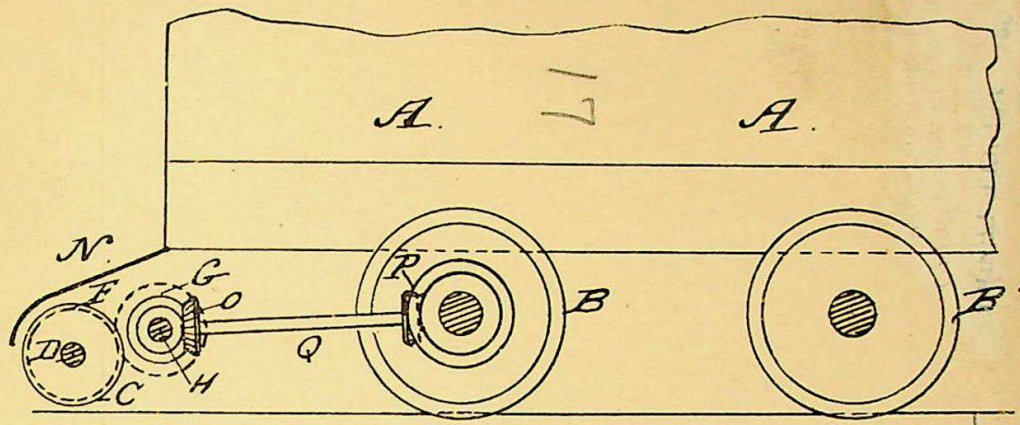


FIG. 4.

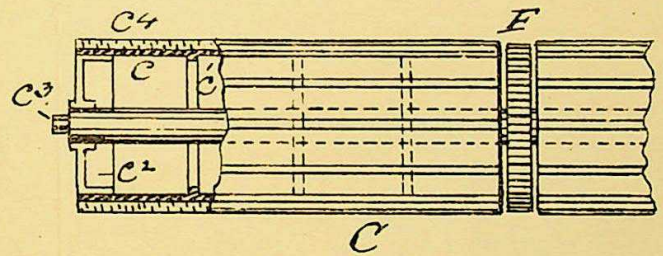


FIG. 5

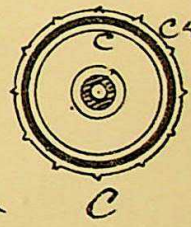
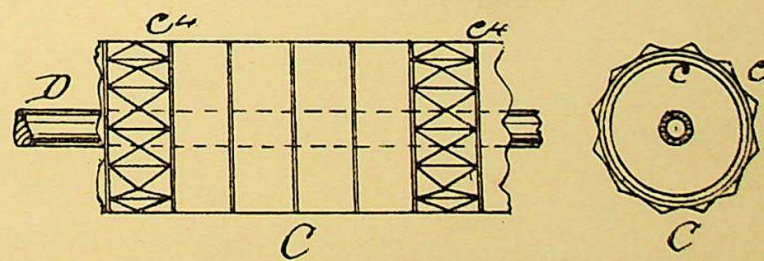


FIG. 6.



Fenders
Rotary
Partially Driven

N° 11,127 A.D. 1898

DUPLICATE

Date of Application, 16th May, 1898

Complete Specification Left, 16th Feb., 1899—Accepted, 8th Apr., 1899

PROVISIONAL SPECIFICATION.

Improvements in Life Saving Apparatus applicable to Tram and Railway Engines, Motor and other Cars and Vehicles.

We, DANIEL HEMMING GILL, of No. 188, Green Lane, Smallheath, in the City of Birmingham, Tube Maker, and JOSHUA HOWELL, of No. 522, Coventry Road, Smallheath, Birmingham, aforesaid, Gentleman, do hereby declare the nature of this invention to be as follows:—

This invention relates to life saving appliances or guards to be attached to tramway engines or cars, and consists in constructing such appliances or guards of a cylindrical shape and so as to be revolved in an opposite direction to the motion of the wheels of the engine or car to which the invention is applied.

In an apparatus constructed in accordance with this invention in one form we make a cylindrical drum of wood or metal of suitable diameter preferably smaller than that of the wheels of the engine or car and and of a length about equal to the width of the front of the latter.

The outside of the drum may be wound or coated with india rubber or asbestos or other suitable or elastic material in the form of ropes or tubes or of ribbed or netted sheets or otherwise covered, and the drum is mounted on a horizontal axle or on pivots at the ends running in metal or other brackets or arms attached to the front of the framework of the engine or car so as to be clear of the roadway. The drum is operated from the front axle of the engine or car in the following manner. Between the drum and the engine or car framing at about the same level as the drum axle is mounted a light spindle which is geared by chain gearing and sprocket wheels to the front axle or other revolving part of the engine or car. This spindle carries a spur pinion gearing with a spur wheel fixed on the axle of the drum preferably in the middle of its length, and the gearing is cased with a metal or other hooped guard within which the drum revolves.

The space from the top of the drum to the front of the engine or car and at the ends may be enclosed with metal or other light casing carried to a suitable level near the roadway so that only the front of the drum is exposed.

By these means when the engine or car is in motion the cylindrical drum is revolved in an opposite direction at any desired velocity and any obstacle rolled safely along or swept aside.

Various modifications of the above devices may be made without departing from the nature of this invention. The revolving drum may be driven from either end or by bevel gearing with longitudinal spindle or by equivalent means. It may also be made to throw in or out of gear at the will of the driver. It may further be set at any angle with the line of tramway.

Dated this 14th day of May 1898.

DANIEL HEMMING GILL,
JOSHUA HOWELL.

[*Price 8d.*]

COMPLETE SPECIFICATION.

Improvements in Life Saving Apparatus applicable to Tram and Railway Engines, Motor and other Cars and Vehicles.

We, DANIEL HEMMING GILL, of No. 188, Green Lane, Small Heath, in the City of Birmingham, Manufacturer, and JOSHUA HOWELL, of No. 522, Coventry Road, Smallheath, aforesaid, Gentleman, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to life saving apparatus or guards to be attached to the front of tram, railway engines, or motor or other cars or vehicles and consists in constructing such apparatus or guards of a cylindrical shape and so as to be revolved in an opposite direction to the motion of the wheels of the engine or car to which the invention is applied, the object being to roll safely along or sweep aside any obstacle in the path of the said tramway engine or car.

In the two accompanying sheets of drawings to be hereinafter referred to:—

Figure 1, Sheet 1 is a side elevation partly in section of the framework of a tramway engine or car shewing our improved apparatus or revolving guard attached thereto.

Figure 2 Sheet 1, is a transverse view of same also partly in section.

Figure 3 Sheet 2, shews a modified form of gearing for operating the said revolving guard.

Figures 4 and 5 Sheet 2 shew the construction of the revolving guard in one of its forms.

Figure 6, Sheet 2, shews a modification of same.

The same letters of reference apply to corresponding parts throughout the whole of the figures.

In Figures 1 and 2 Sheet 1, A A is the framework of a tramway engine. B B^1 are the leading and trailing axles of the same. The improved life saving apparatus now to be described consists of a cylindrical revolving drum C to be afterwards more particularly described, mounted on the axle D carried by the brackets E attached in any suitable manner to the framework A A so that the drum C may just run clear of the roadway as shewn. On this spindle is fixed a spur wheel F of smaller diameter than that of the revolving drum C, engaging with a similar wheel G fixed upon an intermediate spindle H which is also mounted with suitable brackets I, I, to the framework of the engine as shewn. The spindle H also carries a sprocket wheel K with a roller chain L L or other suitable chain gearing to the sprocket wheel M which is fixed on the driving axle of the engine.

The spur wheel F is preferably fixed about the middle of the revolving drum C as shewn and the upper portion of the revolving drum C together with the spur wheel F is cased with a sheet metal or other suitable casing N attached to the brackets E and to the framework of the engine.

The proportions of the sprocket or chain wheels and of the spur gearing E, G, must be so arranged that the velocity of the periphery of the revolving drum C must be greater than that of the forward motion of the engine or car as much as shall be desired or may be found necessary.

In the modified form of gearing shewn in Figure 3 Sheet 2 the intermediate spindle H is geared to the axle B by means of two pairs of bevel wheels O and P one of each being fixed upon the axle B and spindle H respectively engaging with corresponding wheels fixed upon a longitudinal spindle Q mounted upon suitable brackets and bearings R to the framework of the engine or car as shewn. Otherwise the driving axle and the axle of the revolving drum C may be connected with bevel gearing direct without an intermediate spindle H.

The same arrangement of apparatus is obviously applicable to tramway railway, motor or other cars and vehicles propelled by cable electric or other traction or by steam gas or other power. In the case of tramway engines or cars also the gearing may be connected to either the leading or trailing axles.

The cylindrical revolving drum C is preferably constructed of metal with a covering of rubber, asbestos, or other elastic or waterproof material as shewn in elevation and cross section in Figures 4 and 5 respectively. c, c is the body of the drum which may be either plain or corrugated transversely as shewn at c^1 c^1.

The ends c^2 c^2 are mounted on the pivots c^3 c^3 of the axle D. It is preferred to make the drum divided in the middle as shewn with the spur wheel F fixed between, although the latter may be fixed at either end instead. The rubber or other coating in the form of rings c^4 c^4 may be made with ribbed outer faces and stretched on the drum side by side as shewn, or the latter may be wound with a spiral coating, or covered wholly with similar material plain or ribbed or with suitable ribs or projecting studs as shewn in Figure 6.

The drum C may be set at an angle with the roadway if preferred, and the gearing to operate the same may by well known means be made to throw in and out of action at the will of the driver.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed we declare that what we claim is:—

1. The construction and use for tramway engines cars and the like of life saving apparatus or guards consisting of a cylindrical revolving drum operated by the devices shewn or by equivalent devices to revolve the said drum in an opposite direction to that of the wheels of the said engines or cars and at a greater velocity than that of the forward motion of the engine or car substantially as and for the purposes hereinbefore described and set forth.

Dated this 15th day of February 1899.

DANIEL HEMMING GILL,
JOSHUA HOWELL.

Redhill: Printed for Her Majesty's Stationery Office, by Malcomson & Co., Ltd.—1899